REMARKS

Claims 1-3, 5-8, 10-16, 19, 21-25, 27, 29-32 are pending in this application. Claims 4, 9, 17, 18, 20, 26 and 28 have been canceled. Claims 1-3, 5-14, and 21-24 have been withdrawn from consideration. Reconsideration of the rejections in view of the amendments and the following remarks is respectfully requested.

Allowable Claims

Applicant gratefully acknowledges that claims 29-32 are merely objected to as depending from a rejected base claim, but are otherwise allowable.

Objection to Claims

Claims 15, 16, 19 and 29-32 are objected to because of informalities.

Accordingly, independent claims 15 and 29 have been amended to overcome this objection.

Rejections under 35 USC §103(a)

Claims 15, 16 and 19 were rejected under 35 USC §103(a) as being obvious over Lee (U.S. Patent No. 6,077,450) in view of Joo (U.S. Patent No. 6,342,425).

Applicant respectfully traverses this rejection.

Claim 15 has been amended to recite "(a) forming a rare metal layer above a semiconductor substrate formed with semiconductor elements and a lower electrode and an oxide dielectric film of a capacitor." The amendment is made to clarify that the step (a) forms a rare metal layer **for the**

upper electrode of the capacitor. In other words, a lower electrode and an oxide dielectric film (such as TaO, PZT or BST) have already been made for the capacitor.

According to the present invention, rare metal electrode is used because the upper electrode can be oxidized by the oxygen from the oxide dielectric film. Also, because oxide dielectric film can be deteriorated by the reducing atmosphere, a metal nitride layer is formed without using a hydrogen-containing gas, and TEOS-based oxide is used for the insulation film. Annealing in hydrogen-containing gas (page 15, lines 23-24, claim 19) may be required after the semiconductor device structure is completed.

On the other hand, it should be noted that Lee discusses formation of a **lower electrode** of a capacitor (see column 1, lines 6-9) but it does not discuss formation of an upper electrode.

Joo teaches forming a dielectric film 60 on the patterned lower electrode 50. When Lee and Joo are combined, it would be taught to form a dielectric film on the lower rare metal electrode of Lee. Joo also teaches to form an upper electrode of the capacitor with lamination of a rare metal layer 70 and a silicide layer 80', and to form an oxide layer 90 covering the capacitor structure by using TEOS (FIG. 3H). In Joo, however, there is no patterning process for the upper electrode using a hard mask layer in the embodiment of FIGs. 3A-3I.

Thus, Lee teaches nothing about the upper electrode of the capacitor, and Joo shows no patterning using a hard mask, nor patterning itself (FIG.4C). Further, the metal nitride hard mask of Lee should be removed (Fig. 3e) to use the rare metal layer as the lower electrode. The number of processes increases by the use of the hard mask layer on the lower electrode. The TEOS-based oxide layer of Joo is used for controlling stress.

For at least these reasons, claim 15 patentably distinguish over Lee and Joo. Claims 16 and 19, depending from claim 15, also patentably distinguish over Lee and Joo for at least the same reasons.

Moreover, regarding claim 19, in the process of forming a lower electrode of a capacitor as in Lee, TEOS-based oxide and hydrogen annealing is not necessary.

Thus, the 35 U.S.C. 103(a) rejection should be withdrawn.

Claims 25 and 27 were rejected under 35 USC §103(a) as being obvious over Lee in view of Joo and Hasegawa et al (U.S. Patent No. 6,452,274).

Applicant respectfully traverses this rejection.

Like claim 15, claim 25 also has been amended to recite "(a) forming a rare metal layer above a semiconductor substrate formed with semiconductor elements and a lower electrode and an oxide dielectric film of a capacitor." As discussed above, Lee and Joo do not teach or suggest the recitation.

Hasegawa et al has been cited for allegedly disclosing TaO being used instead of silicon oxide as a mask as conventional in the art. Such disclosure of Hasegawa et al, however, does not remedy the deficiencies of Lee and Joo discussed above.

For at least these reasons, claim 25 patentably distinguishes over Lee, Joo and Hasegawa et al. Claim 27, depending from claim 25, also patentably distinguishes over Lee, Joo and Hasegawa et al for at least the same reasons discussed above.

Thus, the 35 USC §103(a) rejection should be withdrawn.

It is submitted that nothing in the cited references, taken either alone or in combination, teaches or suggests all the features recited in each claim of the present invention. Thus all pending claims are in condition for allowance. Reconsideration of the rejections, withdrawal of the rejections and an early issue of a Notice of Allowance are earnestly solicited.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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